Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: a systematic review and meta-ethnography

Dr Gillian S Gould - corresponding author

School of Public Health, Tropical Medicine and Rehabilitation Sciences

James Cook University (Cairns Campus)

PO Box 6811

Cairns, Queensland, 4870

Australia

Email: gillian.gould1@my.jcu.edu.au

Telephone +61 403615563

Dr Joanne Munn

Southern Cross University

Hogbin Drive

Coffs Harbour, NSW, 2450

Australia

Ms Tracey Watters

Southern Cross University

Hogbin Drive

Coffs Harbour, NSW, 2450

Australia

Dr Andy McEwen

NHS Centre for Smoking Cessation and Training (NCSCT)

Department of Psychology

University College London

1-19 Torrington Place

London WC1E 7HB

United Kingdom

Associate Professor Alan R Clough

School of Public Health, Tropical Medicine and Rehabilitation Sciences

James Cook University (Cairns Campus)

PO Box 6811

Cairns, Queensland, 4870

Australia

Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: a systematic review and meta-ethnography

Abstract

Introduction:

Maternal smoking rates in Australian Aboriginal women are triple that of the general population, with little evidence for successful interventions. We reviewed the literature to understand smoking and cessation in Aboriginal and Torres Strait Islander women and provide recommendations for targeted interventions.

Methods:

Six databases were searched using terms related to smoking, pregnancy and Aboriginal Australians. Two reviewers independently assessed papers for inclusion and quality. Meta-ethnography synthesised first and second-order constructs from included studies and constructed a line of argument.

Results:

Seven relevant studies were analysed. The synthesis illustrates eleven third order constructs operating on the levels of self, family and social networks, the wider Aboriginal community and broader external influences. Highlighted are social norms and stressors within the Aboriginal community perpetuating tobacco use; insufficient knowledge of smoking harms; inadequate saliency of anti-smoking messages; and lack of awareness and use of pharmacotherapy. Indigenous Health Workers have a challenging role, not yet fulfilling its potential. Pregnancy is an opportunity to encourage positive change where a sense of a 'protector role' is expressed.

Conclusions:

The review gives strength to evidence from individual studies across diverse Indigenous cultures. Pregnant Aboriginal and Torres Strait Islander smokers require comprehensive approaches, which consider the environmental context, increase knowledge of smoking harms and cessation methods, and provide culturally targeted support. Long term, broad strategies should de-normalise smoking in Aboriginal and Torres Strait Islander communities. Further research needs to examine causes of resistance to anti-tobacco messages, clarify contributing roles of stress and depression, and attitudes to pharmacotherapy.

Keywords: Indigenous populations; Aboriginal and Torres Strait Islanders; tobacco smoking; maternal smoking; smoking cessation; Australia; pregnancy; women; social context; meta-ethnography; systematic review

Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: a systematic review and meta-ethnography

Introduction

Australia is a world leader in tobacco control, with smoking prevalence of 16.6% (OECD, 2011). In contrast Australia's Indigenous people, like other Indigenous populations worldwide, maintain a high use of tobacco, with current smoking prevalence of 47% (AIHW, 2008). Tobacco use has a long historical precedent in Australian Indigenous populations (Winstanley, 2008) pre-dating European contact. Bush tobaccos or Pituri were chewed and later the Macassans traded smoking tobacco and pipes. Post-colonisation, tobacco was used as rations and pay for Aboriginal and Torres Strait Islanders and use became more widespread. Even today cigarettes are used for bartering and shared between community members. Tobacco use is now well woven into the fabric of Aboriginal and Torres Strait Islander life. This is of concern as tobacco is known to contribute significantly to the burden of disease in Aboriginal and Torres Strait Islanders (Vos et al., 2009), and relevant to this review, to adverse outcomes in pregnancy.

Smoking prevalence during pregnancy is disproportionately high (52%) for Aboriginal and Torres Strait Islander women, compared with their non-indigenous counterparts (15%) (Laws et al., 2006). Only 3% of Indigenous smokers become abstinent in the first half of pregnancy compared to 7% of pregnant Australians in general (Wills &

Coory, 2008). Smoking during pregnancy is a risk factor for poor maternal and infant health outcomes including miscarriage, still birth, low birth weight (Triche & Hossain, 2007), and sudden infant death syndrome (SIDS) (Anderson et al., 2005). Aboriginal and Torres Strait Islander babies are twice as likely to be preterm or low birth weight (Laws et al., 2006; Trewin & Madden, 2003), and eight times more likely to die of SIDS (Freemantle et al., 2006). Children whose mothers smoked are more likely to have cognitive, emotional and behavioural problems, which can persist into adulthood (Rogers, 2009). If, however, during the first four months of pregnancy, the mother can quit, the risk of a low birth weight baby decreases to almost that of a non-smoker (Heath et al., 2006) and problematic behaviour such as hyperactivity are lower than continuing smokers (Robinson et al., 2010).

Given the significant impact of smoking on maternal and infant health, and the contribution of smoking to the burden of disease in Aboriginal and Torres Strait Islanders (Vos et al., 2009), effective strategies for cessation for pregnant Aboriginal and Torres Strait Islander women are essential. Unfortunately, there is limited evidence for successful interventions in this population. Current recommendations suggest adoption of innovative, culturally appropriate strategies aimed at pregnant Indigenous women (Lewis et al., 2009).

To develop targeted interventions for pregnancy it is important to have a comprehensive understanding of knowledge and views about smoking from an Aboriginal and Torres Strait Islander perspective and their barriers to cessation. Lumley et al (2009) have recommended gaining greater insight into the experiences and vulnerabilities of women who continue to smoke in pregnancy. Research ethics guidelines for Indigenous

Australians recommend basing community programs on local knowledge and views (NHMRC, 2006). Several studies have been conducted on maternal smokers from different areas of Australia, but it is unknown how transferable the results are to other tribal and language groups. To date there has been no systematic review to bring together published views on the topic in this population group.

Our objective was to systematically review and synthesise the available literature on maternal Aboriginal and Torres Strait Islander smoking in Australia to identify key knowledge, attitudes, beliefs, and barriers around maternal smoking and cessation. Meta-ethnography, a recommended method for qualitative systematic review (Higgins & Green, 2011), was used to synthesise data from included studies and construct a line of argument (Noblit & Hare, 1988). The aim was to enrich the understanding of maternal smoking in Aboriginal and Torres Strait Islander women, and explore commonalities across studies, in order to provide recommendations for targeted interventions. Meta-ethnography was chosen as it is essentially a translational process and a rigorous system for developing interpretations from a set of qualitative studies (Noblit & Hare, 1988) in order to bring coherence and clarity. It allows for a rich description of phenomena in primary studies to shape a synthesising argument (Hannes & Lockwood, 2011). From this analysis, we provide recommendations for policy and practice concerning maternal tobacco cessation interventions for Aboriginal and Torres Strait Islander families.

Methods

Search Strategy

The following databases were searched through to March 2011: Medline, CINAHL, Embase, psych INFO, Science Direct and Australian specific databases via Informit (see appendix 1). Searches used a combination of truncated keywords and/or subject headings relevant for each database related to (tobacco or nicotine or smoking) combined with (pregnancy or maternal or mother) and combined with (Aboriginal or Torres Strait Islander or Indigenous). Inspection of publication lists on the Centre for Excellence in Indigenous Tobacco Control and Australian Indigenous Health Infonet websites, reference lists of included papers and key reviews known to authors supplemented the search.

Selection criteria

Studies were selected irrespective of methodology providing they were available as full manuscripts of original research, which included the target group of Aboriginal and/ or Torres Strait Islander women, to explore and report on attitudes, beliefs, knowledge, or experiences related to maternal smoking and/or barriers to cessation.

Two reviewers (GG and JM) independently screened titles and abstracts and discarded those not meeting inclusion criteria. Full papers of likely studies were then considered independently to determine eligibility. Figure 1 portrays the process of study selection. Where consensus for inclusion could not be reached at any stage, (as occurred for two full papers under consideration), a third reviewer (TW) adjudicated.

In the absence of uniform guidelines for reporting methodological rigour of qualitative studies, two checklists were used: the first by Hawker et al (2002) as a method of systematically reviewing research quality from different paradigms (qualitative, quantitative or mixed methods), and secondly a hierarchy of evidence-for-practice proposed by Daley et al (2006). The Hawker appraisal tools enable the calculation of a numerical score for overall methodological rigour across a range of criteria individually graded: these are itemised in table 1 (Hawker et al., 2002). Ranking takes into account the transparency and methodological rigor of the study's aims, methods, sampling, data analysis, and reporting. Daly's hierarchy proposes to evaluate studies as level I - generalisable, level II - conceptual, level III - descriptive, or level IV - single case studies (Daly et al., 2006).

Two reviewers independently rated studies for methodological quality (JM and TW) (Hawker et al., 2002) and hierarchy of evidence-for-practice (JM and GG) (Daly et al., 2007). Disagreements were resolved by adjudication of a third reviewer, required for one study.

Data extraction & Synthesis of Findings

Meta-ethnography was used to synthesise the findings from the included studies (Noblit & Hare, 1988). Meta-ethnography often uses Schutz's (1971) notion of first, second and third-order constructs: these were utilised in the analysis. First-order constructs are raw data, for example participants' attitudes, often represented as quotes; second-order constructs are researchers' interpretations of this data; third-order constructs are higher-

order concepts connecting those constructs that have resonance with each other (Barnett-Page & Thomas, 2009).

Data were extracted for aims, participant recruitment and demographics, geographical study region and setting, research methods and key findings. Table 2 summarises the characteristics of included papers. For qualitative data, first and second-order constructs were extracted and grouped (Hannes & Lockwood, 2011) according to the following headings: experiences of smoking, experiences of environmental tobacco smoke (ETS), knowledge of health effects of smoking and ETS, beliefs about and attitudes to the health effects of smoking and ETS, knowledge about cessation, beliefs and attitudes about cessation, strategies for cessation, influences on and barriers to cessation. Quantitative data were extracted and included under the relevant subject headings with the second order constructs.

In determining how studies related, themes were proposed that emerged from the first and second-order constructs. These were further explored, grouped, refined and condensed to form emergent thematic third-order constructs. The third-order constructs were checked to ensure they captured all perspectives from included studies.

A line of argument (LOA) (Noblit & Hare, 1988) or synthesising argument was formed using visual displays (Denzin & Lincoln, 2011) relating the third order constructs to each other forming an overarching concept (Barnett-Page & Thomas, 2009) revealing a whole amongst parts (Noblit & Hare, 1988). The results were thus linked to the aims of this current review. A composite depiction was selected as a way to enliven the

description of the LOA, borrowing a tool from phenomenological research (Moustakas, 1990).

Throughout the above processes, authors maintained a reflexive stance by frequently discussing their assumptions and values and maintaining awareness of their non-indigenous backgrounds.

Results

Seven out of 1182 studies met all inclusion criteria (figure 1). Participants in included papers totalled 652 (640 female): 483 identified as Aboriginal and/or Torres Strait Islander. Study sites were New South Wales, Queensland, Western Australia and Northern Territory, including rural, remote and urban settings. The aims of included papers were to: assess factors related to maternal smoking in Aboriginal and/or Torres Strait Islanders (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wood et al., 2008); investigate general factors associated with Aboriginal and/or Torres Strait Islander smoking (Johnston & Thomas, 2008); examine antenatal care for Aboriginal and/or Torres Strait Islanders (Wilson, 2009); and assess maternal SIDS awareness (Douglas et al., 2001) (Table 1). While the three latter papers' focus was not maternal smoking, all met inclusion criteria. The majority of studies provided qualitative data from focus groups or interviews (Douglas et al., 2001; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). Three studies provided quantitative data from questionnaires (Douglas et al., 2001; Gilligan et al., 2009; Heath et al., 2006).

The assessment of methodological quality revealed varied scores. Table 1 details the individual ratings across the criteria for both scales. The three highest rating papers (Gilligan et al., 2009; Johnston & Thomas, 2008; Wood et al., 2008) scored good or fair on all criteria (Hawker et al., 2002). Methodological quality rating using the Hawker scale considered research reflexivity and awareness of bias under item 6 of the scale "ethics and bias". Four papers rated 'good' on item 6 criteria (table 1). Cultural appropriateness is an important consideration in Indigenous studies. While there was no separate assessment criterion for 'cultural appropriateness', item 6 of the scale rated ethical considerations and ethics approval. It was thereby anticipated that those Indigenous studies, which underwent formal ethics review, had appropriate methodologies. Based on the hierarchy of evidence-for-practice ratings (Daly et al., 2007) most studies were 'descriptive' with the exception of one (Johnston & Thomas, 2008) rated as a 'conceptual' study. The top ranking papers in Daly's hierarchy have a greater potential for transferability.

Synthesis and description of constructs

Eleven third order constructs were identified from the analysis. The titles given to the constructs reflect the predominant synthesis and where negative cases or outliers occur, these are identified under the same construct. Where several papers are cited for an individual descriptor, this may give strength to the weight of the evidence. Table 3 shows the spread of these constructs across the included papers.

Third order constructs

Smoking is a way of life

Smoking is seen as a way of life: reported by the majority of studies (Gilligan et al.,

2009; Passey et al.; Wilson; Wood et al., 2008). It is acceptable and common (Gilligan et al., 2009; Passey et al.; Wilson; Wood et al., 2008), accompanies many other social activities, such as yarning, alcohol consumption (Wilson, 2009), and companionability (Wood et al., 2008). Limited opportunities in the community (e.g. employment) lead to reliance on smoking to relieve boredom (Gilligan et al., 2009; Passey et al.; Wilson; Wood et al., 2008). Smoking cessation is a low priority due to multiple, competing community problems. Stressors, associated with family problems and bereavement, are common and linked to smoking (Gilligan et al., 2009; Passey et al.; Wilson; Wood et al., 2008), as is concomitant domestic violence (Wood et al., 2008). Cannabis and other substance abuse is reported along with smoking (Wood et al., 2008).

Smoking helps getting through the day

Aboriginal maternal smokers express, in the majority of studies, that smoking helps them deal with everyday life (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). This construct depicts similar issues to smoking is a way of life but at an individual level. Smoking is used as a way of coping with stress (Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), helping relaxation, enabling time out and used as a reward (Wood et al., 2008). Triggers for smoking include seeing others, especially family, smoking (Heath et al., 2006; Passey et al., 2009; Wood et al., 2008) and after meals and beverages (Heath et al., 2006; Passey et al., 2009).

Smoking persists despite knowledge of harms

Aboriginal women have some knowledge that smoking is harmful during pregnancy – reported in four studies (Gilligan et al., 2009; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), but the level and specificity of knowledge is variable (Gilligan et al., 2009). Those with better knowledge are more likely to have a higher level of education (Gilligan et al., 2009) and are less likely to smoke indoors (Gilligan et al., 2009). In one community, by contrast, some pregnant women did not believe smoking was harmful (Wilson, 2009). There were beliefs, for example, that chewing native tobacco or Pituri is not harmful (Wilson, 2009). (Health effects of native tobacco have not yet been investigated (Winstanley, 2008)). There is lack of visibility of harm and lack of correlation between poor outcomes and smoking in pregnancy (Wood et al., 2008). Effects such as low birth weight may not be considered harmful or possibly not considered related to smoking (Wood et al., 2008). Smoking is however viewed by some as a filthy, smelly habit (Passey et al., 2009) and addictive (Wood et al., 2008).

Information alone is not enough to change smoking behaviour

This construct is related to: smoking persists despite knowledge of harms, but the emphasis here is on suggested interventions for cessation. Smoking prevalence remains high in the community (Gilligan et al., 2009) as information alone is insufficient to support quitting. There is a desire for information about harms of smoking and benefits of quitting, and information sources are remembered (Wilson, 2009). Community suggestions for interventions include proactively seeking help (Wood et al., 2008), quit programs (Heath et al., 2006), free NRT (Heath et al., 2006; Wood et al., 2008), support or quit groups (Heath et al., 2006), postpartum support (Passey et al., 2009), elders

support in own language (Wilson, 2009), and culturally suitable resources (Douglas et al., 2001). First-time mothers may be more receptive before they get complacent about smoking in pregnancy (Wood et al., 2008). However, many young Aboriginal women seek antenatal care late in pregnancy (Wood et al., 2008).

Lack of salience of health risk messages about smoking

The majority of included studies report some level of resistance to health risk messages as follows. Health campaign messages on the detrimental effects of maternal and passive smoking on the baby are considered not to have an impact on Aboriginal women (Douglas et al., 2001; Heath et al., 2006). Television advertising is reported as disturbing and avoidance behaviour is exhibited towards media messages (Passey et al., 2009). In two studies, the harms of smoking in pregnancy are discounted or denied (Gilligan et al., 2009; Wood et al., 2008). The dangers of smoking are refuted when babies turn out to be normal (Wood et al., 2008). On the other hand, some community members are sick of the negative impact of smoking on families (Johnston & Thomas, 2008). Many people have noted smoking-related illnesses in their elders (Passey et al., 2009). In one study, older women expressed concern about younger pregnant women smoking (Wilson, 2009).

Resistance to advice and smoking justified

There is variation of receptivity to anti-smoking advice. Smoking is viewed as a personal choice and people do not like to be told what to do (Passey et al., 2009; Wilson, 2009; Wood et al., 2008). There are many rationalisations for continuing smoking such as ‘if others smoke around you, while you are pregnant, you may as well

smoke yourself' (Gilligan et al., 2009) and a majority view was that stressors make it seem okay to smoke (Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). This theme overlaps with the lack of salience of health risk messages with impacts of smoking being refuted.

Reducing harm, being a protector

Pregnancy is a catalyst to quit or cut down (Wilson, 2009; Wood et al., 2008). Quitting for the child's sake can be more motivating than quitting for one's self. Women expressed wanting to do right by their baby and the importance of their role as a 'protector' (Johnston & Thomas, 2008; Passey et al., 2009). IHWs consider harm minimisation strategies easier to encourage in maternal smokers than smoking cessation (Wood et al., 2008). Cutting down cigarette consumption during pregnancy is common (Passey et al., 2009; Wilson, 2009; Wood et al., 2008). Concern about exposure to ETS is varied. There may be avoidance of smoking around non-smoking relatives (Wood et al., 2008), especially children (Johnston & Thomas, 2008; Wood et al., 2008). Mothers attempt to move children from a smoking environment (Wood et al., 2008), although others only protect new-borns due to a misperception that only the very young are susceptible to ETS (Wood et al., 2008).

Quitting is hard

Quitting is viewed as hard (Passey et al., 2009; Wilson, 2009; Wood et al., 2008), perceived as taking willpower (Wood et al., 2008) and a difficult habit to break (Passey et al., 2009). There is little support for, or pressure to quit (Passey et al., 2009). Some who quit in pregnancy, in contrast, did not find it hard (Wood et al., 2008). People are

more motivated if they have a health problem (Wood et al., 2008). Many pregnant women are seen as strongly addicted (Passey et al., 2009) although nicotine dependence in pregnancy was reported as being low to medium (Heath et al., 2006). Views on the use of pharmacotherapy for maternal smoking cessation were under-represented in the studies. Only one study reported the use of quit attempts assisted by Nicotine Replacement Therapy (Wood et al., 2008). Going cold turkey (Wood et al., 2008) and cutting down (Passey et al., 2009; Wilson, 2009; Wood et al., 2008) are the most common methods discussed and resumption of smoking post-partum is common (Passey et al., 2009).

Role of family and community in quitting

This construct overlaps with smoking is a way of life. Family influences feature in five studies and are described as both a help (Passey et al., 2009; Wilson, 2009) and a hindrance (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008) to quitting. Maternal smoking is more prevalent where there is household smoking (Heath et al., 2006; Passey et al., 2009), a partner smoking (Gilligan et al., 2009), or for those with an Aboriginal partner (Gilligan et al., 2009). It is important for family to acknowledge the difficulty of quitting and support quit attempts during pregnancy (Passey et al., 2009; Wood et al., 2008). A community and family approach is required as high community smoking rates are also a barrier to quitting (Heath et al., 2006). Assessing the household environment is suggested, supporting the maternal smoker to quit by encouraging others not to smoke around her (Passey et al., 2009); targeting smoking in male partners is important (Gilligan et al., 2009; Wilson, 2009). Avoiding other smokers socially was suggested (Wood et al., 2008). Wider social determinants and social stress are barriers to cessation (Heath et al., 2006;

Wilson, 2009; Wood et al., 2008), including unemployment (Wood et al., 2008), hopelessness (Wood et al., 2008), boredom (Heath et al., 2006; Wood et al., 2008), stress (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), racial discrimination (Wood et al., 2008) and domestic violence (Wood et al., 2008).

Being a good role model has importance

Being a good role model has salience for maternal smokers and their families (Johnston & Thomas, 2008). Some experience shame in front of the family, or feel they will disgrace their family, if they continue smoking in pregnancy (Wilson, 2009). Most do not want to continue smoking. Older women who quit could influence younger women (Passey et al., 2009).

Role of IHWs and other professionals is challenging

The role of IHWs was reported mainly in one study by Wood (2008). Health workers reported receiving negative responses when initiating cessation advice (Wood et al., 2008). They avoid adding to the burden of their clients (Wood et al., 2008) and do not want to jeopardise the trusting relationship (Wood et al., 2008). IHWs are aware that smokers do not like to be told what to do (Wood et al., 2008): they find giving general pregnancy information and advice about passive smoking is less challenging than advising cessation (Wood et al., 2008). IHW feel hindered to assist because of lack of protocols to support cessation (Wood et al., 2008). From the women's perspective, although personal choice is emphasised, it is acceptable for health workers to provide encouragement to make positive choices regarding cessation (Passey et al., 2009).

Line of argument

The line of argument (LOA) was developed to postulate an overarching concept or metaphor by juxtaposing the themed third-order constructs, thus building a picture of how maternal smoking effects and is affected by Aboriginal and Torres Strait Islander communities. All studies fit within the LOA except for Douglas et al. (2001), which had a narrow focus but nonetheless explored knowledge associated with SIDS and smoking.

Figure 2 illustrates the LOA model and represents the positive and negative influences surrounding maternal smoking: the third-order constructs positioned according to their level of influence and connections to each other. It may be noted that views represented are disparate within the self, family and the community.

The LOA is conveniently described by a composite depiction (Moustakas, 1990). At the centre is the pregnant Aboriginal or Torres Strait Islander smoker. At heart she desires to be a good role model and protector of her developing child. She is reliant on smoking getting her through her day. Although she has some knowledge that smoking is harmful, she persists in smoking. Information alone is not sufficient to help her quit. She believes quitting is hard, and does her best to reduce harm from her smoking by cutting down and protecting children from ETS. As smoking is a way of life in the Aboriginal community, there is little support to quit. She receives both positive and negative support from her surrounding family and social network for being smoke-free. Anti-smoking messages, coming from both the wider Aboriginal community and externally, are not having a meaningful impact. Even IHWs, who could assist in a more

meaningful way, are hampered by lack of protocols. These conflicting demands on the pregnant Aboriginal or Torres Strait Islander smoker produce attitudes of resistance and cognitive dissonance.

Discussion

This systematic review has identified key constructs relating to knowledge, attitudes and beliefs about maternal smoking and cessation in Aboriginal and Torres Strait Islander communities. Meta-ethnography has been used to synthesise data from included studies to a comprehensive summary and propose a line of argument.

Results from this review are consistent with various findings on maternal smoking and barriers to cessation during pregnancy in non-Indigenous populations. A systematic review by Ingall and Cropley (2010) similarly found women generally faced barriers to quitting from family and friends, and personal issues such as lack of willpower. Likewise, smoking was embedded in women's lives, and addressing only biological factors was insufficient for cessation. Awareness of smoking harms was present, but women often lacked the confidence or self-efficacy to quit. However social stigma and negative connotation attached to smoking in pregnancy that other disadvantaged populations experience (Bull et al., 2007) may be less important in Indigenous populations due to smoking being interwoven in women's social and personal realms (Cottrell et al., 2007). Operating beyond the higher level of prevalence in the Aboriginal population is a distinctive quality of social connectedness related to smoking

(Johnston & Thomas, 2008). Barriers to quitting are heightened also in other populations of low socio-economic background (Stead et al., 2001).

The meta-ethnography suggested that male partners who smoke should be targeted. Relatedly, Gage et al. (2007) found pregnant women abstained for longer if male partners quit in tandem. Similarly post-partum resumption of smoking reported here in Aboriginal or Torres Strait Islander women is also a risk for the general maternal population where 65-80% resume smoking by 1 year (Mullen, 2004).

Resistance to anti-tobacco messages in Aboriginal maternal smokers as a barrier to cessation was evident, however it was unclear in this review why such resistance exists. Resistance to cessation advice has been previously linked to factors relevant to this review, such as: socio-economic status (Pickett et al., 2002), scepticism when advice is given by health professionals who smoke (Hotham et al., 2002), smoker identity with defensive motivation (Falomir & Invernizzi, 1999), and addiction – the more dependent smokers resent advice (MacIntosh & Coleman, 2006) and reject authority (Cottrell, et al., 2007). Resistance has also been reported in other maternal populations. Women smokers with previous uncomplicated pregnancies have stronger denial (Bull et al., 2007; Tod, 2003), while those fully aware of the impact of smoking in pregnancy are less defensive and more open to quitting (Ingall & Cropley, 2010). Maternal smokers in this review also trusted more in personal experiences than scientific evidence, consistent with research in other pregnant populations (Abrahamsson et al., 2005; Tod, 2003). The Extended Parallel Process Model suggests that such maladaptive responses of denial, avoidance or reactance occur when self-efficacy is low and fear levels are high (Witte et

al., 2001). Our review suggests some of the elements described above may be operant in Aboriginal and Torres Strait Islander maternal smokers, and warrant further exploration.

Papers in this review reported addiction to be a barrier to cessation in Aboriginal maternal smokers (Passey et al., 2009; Wood et al., 2008), however the one paper (Heath et al., 2006) which quantified dependence, found the majority had low scores on the Fagerström Test for Nicotine Dependence (FTND) (Heatherton et al., 1991). This incongruity may relate to alterations in nicotine metabolism in pregnancy (Dempsey et al., 2002), and the common practice of reducing consumption (Castrucci et al., 2006), rendering the FTND perhaps less reliable in pregnancy. Measuring urges to smoke may be a more accurate gauge of dependency (Fidler et al., 2011).

Stress was noted to be a major factor associated with maternal smoking in this review (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wood et al., 2008), however, depression was not explored, which suggests that depression associated with maternal smoking may be under-recognised in this population. In contrast, high depression scores are reported in pregnant smokers from other Indigenous and minority populations (King et al., 1997; Orr et al., 2011), which interestingly have been linked with rejection of authority and addiction (Cottrell et al., 2007).

The persistence of smoking despite knowledge of harms may link to the perception that quitting is difficult, coupled with lack of knowledge and availability of effective cessation methods, leading to ineffective cessation attempts. However views on the use of Nicotine Replacement Therapy were inadequately represented in the studies - an important omission considering this is the therapy of choice if pregnant women cannot

quit unassisted. Structural barriers to cessation, such as lack of policy to support IHW-led interventions was one of a range of possible systemic barriers identified: others such as limited access of maternal Aboriginal and Torres Strait Islander smokers to effective therapies and over-constraining guidelines for medication use in pregnancy have been proposed elsewhere (Gould et al., 2011).

On the positive side however, as with maternal Aboriginal or Torres Strait Islander smokers in this review, most women try to be 'good' mothers and protect their babies' from tobacco smoke (Pletsch, 2006). Being a good role model and a protector has salience for maternal smokers (Johnston & Thomas, 2008), but other salient messages appear to be lacking within the Aboriginal community and from wider society. Reducing cigarette consumption, rather than abrupt quitting, is seen as an easier option: a factor associated elsewhere with low socio-economic status (Siahpush et al., 2010).

The implications for practice from this review include creating programs to support smoke-free Aboriginal and Torres Strait Islander pregnancies, which treat women in context of their environment. Box 1 contains our suggestions for potential approaches to enrich knowledge of smoking harms in pregnancy, increase salience of anti-smoking messages, provide culturally targeted quit support, and support the role of IHW in tobacco control. Additionally, long term, broad strategies are needed to de-normalise smoking in Aboriginal communities and address underlying social determinants. Until there is specific evidence for this population, existing guidelines for best practice cessation strategies for maternal smokers, (Lumley et al., 2009) and smokers in general (West et al., 2011), should be integrated with innovative approaches tailored to the target population.

Further research is required to elucidate the causes of resistance to anti-tobacco messages and cessation advice in pregnant Aboriginal and Torres Strait Islander smokers. Response efficacy and self-efficacy are little understood in the target populations. An important evidence gap relates to depression as a potentially coexistent factor in pregnant Indigenous smokers. There is also little known yet about their attitudes to the use of Nicotine Replacement Therapy. Although policy-level issues were raised regarding IHW interventions, other structural barriers were not clear, for example access to evidence-based treatment. Understanding these factors may improve Aboriginal and Torres Strait Islander women's abilities to respond to anti-tobacco messages and cessation interventions.

By synthesising the available literature, the review gives strength to the evidence from individual maternal studies across a selection of diverse Aboriginal and Torres Strait Islander cultures. We also identified some limitations. The review represented urban, rural and remote locations but papers were not found for all states or the Torres Strait Islands. Male participants were under-represented and given their apparent influence on maternal smoking, their views are important. Meta-ethnography is most useful to synthesise themes resulting from qualitative studies and thus this review may not have accurately captured the included quantitative elements. Additionally each included study had different aims and measured different aspects of the broad topic, thus some individual studies contributed more data to the meta-ethnography than others. Making inferences about the value of each individual study to the meta-ethnography may be problematic. Reporting biases may impact: authors selectively represent first order constructs so it is unknown how closely their second order constructs relate to their first

order and papers also varied in reporting of themes. Lastly, meta-ethnography by definition is an interpretive process based on the researchers discerning interests, therefore this review is only one of a possible set of interpretations (Noblit & Hare, 1988). However, the aim was to enrich understanding and further discourse on maternal smoking in Aboriginal and Torres Strait Islander communities.

Conclusion

Social norms and stressors within Aboriginal and Torres Strait Islander communities perpetuate tobacco use in pregnancy. There is lack of knowledge of smoking harms and inadequate salience of current anti-smoking messages for maternal smokers. Poor knowledge of, access to and use of evidence-based treatments for smoking cessation in pregnancy are impediments to cessation. Pregnancy is a short window of opportunity to encourage positive change where a strong 'protector role' is expressed. By synthesising evidence from seven relevant studies this meta-ethnography has offered recommendations for practice and policy to overcome barriers associated with Aboriginal and Torres Strait Islander smoking cessation during pregnancy, these include focusing on the pregnant smoker in context with her environment and social networks.

Funding

This work was funded in part by the Indigenous Tobacco Control Initiative, Australian Government Department of Health and Ageing.

Declaration of interests

The authors have no competing interests to declare.

Acknowledgements

We would like to acknowledge the University of New South Wales, Rural Clinical School for their support in the initial part of this study, including Associate Professor Rick van der Zwan who originally approved the study protocol. The Mid North Coast (NSW) Division of General Practice are acknowledged for their support as managers of the No Smokes North Coast project under which this study was conducted, as an initial phase to inform the development of a targeted maternal smoking cessation program.

References

Abrahamsson, A., Springett, J., Karlsson, L., & Ottosson, T. (2005). Making sense of the challenge of smoking cessation during pregnancy: a phenomenographic approach. *Health Education in Research Theory and Practice, 20*(3), 367-378. doi:10.1093/her/cyg127

Anderson, M., Johnson, D., & Batal, H. (2005). Sudden Infant Death Syndrome and prenatal maternal smoking: rising attributed risk in the Back to Sleep era. *BMC Medicine, 3*(1), 4.

AIHW. (2008). *2007 National Drug Strategy Household Survey: detailed findings*. Canberra: : Australian Institute of Health and Welfare. Retrieved from http://www.aihw.gov.au/publication-detail/?id=6442468195

Barnett-Page, E., Thomas, J. (2009). Methods for the synthesis of qualitative research: a critical review. *BMC Medical Research Methodology, 9*(59). doi: 10.1186/1471-2288-9-59

Bull, L., Burke, R., Walsh, S., & Whitehead, E. (2007). Social attitudes towards smoking in pregnancy in East Surrey: A qualitative study of smokers, former smokers and non-smokers. *Journal of Neonatal Nursing, 13*(3), 100-106. doi:10.1016/j.jnn.2007.01.002

Castrucci, B. C., Culhane, J. F., Chung, E. K., Bennett, I., & McCollum, K. F. (2006). Smoking in Pregnancy: Patient and Provider Risk Reduction Behavior. *Journal of Public Health Management and Practice, 12*(1), 68-76.

Cottrell, L., Gibson, M., Harris, C., Rai, A., Sobhan, S., Berry, T., et al. (2007). Examining smoking cessation during pregnancy among an Appalanchial sample:

a preliminary review. *Substance Abuse Treatment, Prevention and Policy, 2*(14). doi:10.1186/1747-597X-2-14

Daly, J., Willis, K., Small, R., Green, J., Welch, N., Kealy, M., et al. (2007). A hierarchy of evidence for assessing qualitative health research. *Journal of Clinical Epidemiology 60,* 43-49. doi:10.1016/j.jclinepi.2006.03.014

Dempsey, D., Jacob, P., & Benowitz, N. L. (2002). Accelerated metabolism of nicotine and cotinine in pregnant smokers. *The Journal of pharmacology and experimental therapeutics, 301*(2), 594-598. doi:10.1124/jpet.301.2.594

Denzin, N., Lincoln, YS (Ed.). (2011). *The SAGE Handbook of Qualitative Research*. California: Sage Publications.

Douglas, T. A., Buettner, P. G., & Whitehall, J. (2001). Maternal awareness of sudden infant death syndrome in North Queensland, Australia: An analysis of infant care practices. *Journal of Paediatrics and Child Health, 37*(5), 441-445. doi:10.1046/j.1440-1754.2001.00670.x

Falomir, J. M., Invernizzi, F. (1999). The role of social influence and smoker identity in resistance to smoking cessation. *Swiss Journal of Psychology 58*(2), 73-84. doi: 10.1024//1421-0185.58.2.73

Fidler, J. A., Shahab, L., & West, R. (2011). Strength of urges to smoke as a measure of severity of cigarette dependence: comparison with the Fagerström Test for Nicotine Dependence and its components. *Addiction, 106*(3), 631-638. doi: 10.1111/j.1360-0443.2010.03226.x

Freemantle, C. J., Read, A. W., de Klerk, N. H., McAullay, D., Anderson, I. P., & Stanley, F. J. (2006). Sudden infant death syndrome and unascertainable deaths: trends and disparities among Aboriginal and non-Aboriginal infants born in

Western Australia from 1980 to 2001 inclusive. *Journal of Paediatrics & Child Health, 42*(7-8), 445-451. doi:10.1111/j.1440-1754.2006.00895.x

Gage, J., Everett, K., & Bullock, L. (2007). A review of research literature addressing male partners and smoking during pregnancy. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 36*(6), 574-580. doi:10.1111/j.1552-6909.2007.00188.x

Gilligan, C., Sanson-Fisher, R. W., D'Este, C., Eades, S., & Wenitong, M. (2009). Knowledge and attitudes regarding smoking during pregnancy among Aboriginal and Torres Strait Islander women. *Medical Journal of Australia, 190*(10), 557-561.

Gould, G., McEwen, A., & Munn, J. (2011). Jumping the hurdles for smoking cessation in Indigenous pregnant women in Australia. *Journal of Smoking Cessation, 6*(1), 33-36.

Hannes, K., & Lockwood C (Ed.). (2011). *Synthesising Qualitative Research: Choosing the Right Approach.* Chichester: Wiley Blackwell.

Hawker, S., Payne, S., Kerr, C., Hardey, M., Powell, J. (2002). Appraising the evidence: Reviewing disparate data systematically. *Qualitative Health Research, 12*(9), 1284-1299. doi:10.1177/1049732302238251

Heath, D. L., Panaretto, K., Manessis, V., Larkins, S., Malouf, P., Reilly, E., et al. (2006). Factors to consider in smoking interventions for indigenous women. *Australian Journal of Primary Health, 12*(2), 131-136. doi:10.1071/PY06032

Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., & Fagerstrom, K. O. (1991). The Fagerström Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. *British Journal of Addiction, 86*(9), 1119-1127. doi: 10.1111/j.1360-0443.1991.tb01879.x

Higgins, J., Green, S (2011). *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0*. Retrieved from http://www.cochrane-handbook.org

Hotham, E. D., Atkinson, E. R., & Gilbert, A. L. (2002). Focus groups with pregnant smokers: barriers to cessation, attitudes to nicotine patch use and perceptions of cessation counselling by care providers. *Drug and Alcohol Review, 21*(2), 163-168. doi:10.1080/09595230220139064

Ingall, G., & Cropley, M. (2010). Exploring the barriers of quitting smoking during pregnancy: A systematic review of qualitative studies. *Women and Birth, 23*, 45-52. doi:10.1016/j.wombi.2009.09.004

Johnston, V., & Thomas, D. P. (2008). Smoking behaviours in a remote Australian Indigenous community: The influence of family and other factors. *Social Science & Medicine, 67*(11), 1708-1716. doi:10.1016/j.socscimed.2008.09.016.

King, T., Borrelli, B., Black, C., Pinto, B., & Marcus, B. (1997). Minority women and tobacco: Implications for smoking cessation interventions. *Annals of Behavioral Medicine, 19*(3), 301-313. doi: 10.1007/bf02892295

Laws, P., Grayson, L., & Sullivan, E. (2006). *Smoking and pregnancy*. Sydney: AIHW National Perinational Perinatal Statistics Unit.

Lewis, L. N., Hickey, M., Doherty, D. A., & Skinner, S. R. (2009). How do pregnancy outcomes differ in teenage mothers? A Western Australian study. *Medical Journal of Australia, 190*(10), 537-541

Lumley, J., Chamberlain, C., Dowswell, T., Oliver, S., Oakley, L., Watson, L et al. (2009). Interventions for promoting smoking cessation during pregnancy. [Meta-Analysis Review]. *Cochrane Database of Systematic Reviews*. Issue 4 Art. No.: CD001055. doi:10.1002/14651858.CD001055.pub2

MacIntosh, H., & Coleman, T. (2006). Characteristics and prevelance of hardcore smokers attending UK general practice. *BMC Family Practice, 7*(24). doi:10.1186/1471-2296-7-24

Moustakas, C. E. (1990). *Heuristic Research: Design, Methodology and Applications* (1st ed.). Newbury Park, California: Sage Publications.

Mullen, P. D. (2004). How can more smoking suspension during pregnancy becom lifelong abstinence? Lessons learned about predictors, interventions, and gaps in acculmulated knowledge. *Nicotine and Tobacco Research, 6*(Suppl. 2), S217-238. doi:10.1080/14622200410001669150

NHMRC. (2006). *Keeping research on track: a guide for Aboriginal and Torres Strait Islander peoples about health research ethics*. Australian Government, National Health and Medical Research Council. Retrieved from www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e65.pdf.

Noblit, G., & Hare, R. (1988). *Meta-ethnography: Synthesizing Qualitative Studies*. Newbury Park: Sage Publications.

OECD. (2011). Health at a Glance 2011: OECD Indicators. Retrieved from http://dx.doi.org/10.1787/health_glance-2011-en

Orr, S. T., Blazer, D. G., & Orr, C. A. (2011). Maternal prenatal depressive symptoms, nicotine addiction and smoking related knowledge, attitudes, beliefs and behaviors. *Maternal and Child Health Journal*. doi:10.1007/s10995-011-0822-9

Passey, M., Gale, J., Holt, B., Leatherday, C., Roberts, C., Kay, D., Rogers, L., Paden, V. (2009). *Stop smoking in its tracks: understanding smoking by rural Aboriginal women*. Cairns, Qld: The 10th National Rural Health Conference, 2009. Retrieved from http://10thnrhc.ruralhealth.org.au/papers/docs/Passey_Megan_D9.pdf

Pickett, K., Wakschlag, LS, Rathouz, PJ, Leventhal, BL, Abrams, B. (2002). The working-class context of pregnancy smoking. *Health Place, 8*(3), 167-175. doi:10.1016/S1353-8292(01)00042-9

Pletsch, P. K. (2006). A model of postpartum smoking reusmption prevention for women who stop smoking while pregnant. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 35*(2), 215-222.

Robinson, M., McLean, N. J., Oddy, W. H., Mattes, E., Bulsara, M., Li, J., et al. (2010). Smoking cessation in pregnancy and the risk of child behavioural problems: a longitudinal prospective cohort study. *Journal of Epidemiology and Community Health, 64*(7), 622-629. doi: 10.1136/jech.2009.088658

Rogers, J. (2009). Tobacco and pregnancy. *Reprod Toxicol 2009;28:152-60, 28*, 152-160. doi:10.1016/j.reprotox.2009.03.012

Schutz, A. (1971). *Collected Papers. Volume 1 the Problem of Social Reality*. The Hague: Martinus Nijhoff.

Siahpush, M., Yong, H.-H., Borland, R., & Reid, J. L. (2010). Socioeconomic position and abrupt versus gradual method of quitting smoking: Findings from the International Tobacco Control Four-Country Survey. *Nicotine & Tobacco Research, 12*(suppl 1), S58-S63. doi: 10.1093/ntr/ntq135

Stead, M., MacAskill, S., MacKintosh, A.-M., Reece, J., & Eadie, D. (2001). "It's as if you are locked in": qualitative explanations for area effects on smoking in disadvantaged communities. *Health & Place, 7*(4), 333-343. doi: 10.1016/s1353-8292(01)00025-9

Tod, A. (2003). Barriers to smoking cessation in pregnancy: a qualitative study. *British Journal of Community Nursing, 8*(2), 56-64.

Trewin, D., & Madden, R. (2003). *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples.* Canberra: ABS.

Triche, E. W., & Hossain, N. (2007). Environmental Factors Implicated in the Causation of Adverse Pregnancy Outcome. *Seminars in Perinatology, 31*(4), 240-242. doi:10.1053/j.semperi.2007.07.013

Vos, T., Barker, B, Begg, S, Stanley, L, Lopez, AD. (2009). Burden of disease and injury in Aboriginal and Torres Strait Islander Peoples: the Indigenous health gap. *International Journal of Epidemiology*, *38*, 470–477. doi:10.1093/ije/dyn240

West, R., Evans, A., & Michie, S. (2011). Behavior change techniques used in group-based behavioral support by the English stop-smoking services and preliminary assessment of association with short-term quit outcomes. *Nicotine & Tobacco Research*. doi:10.1093/ntr/ntr120

Wills, R. A., & Coory, M. D. (2008). Effect of smoking among Indigenous and non-Indigenous mothers on preterm birth and full-term low birthweight. *Medical Journal of Australia, 189*(9), 490-494.

Wilson, G. (2009). *What do Aboriginal women think is good antenatal care? : consultation report.* Alice Springs, N. T.: Cooperative Research Centre for Aboriginal Health. Retrieved from http://www.lowitja.org.au/files/crcah_docs/Antenatal-Care-Consultation-Report-Sept-2009.pdf

Winstanley, M. (2008). Chapter 8: Tobacco use among Aboriginal peoples and Torres Strait Islanders In M. Scollo, Winstanley, MH, (Ed.), *Tobacco in Australia: Facts and Issues. (3rd ed.)*. Melbourne: Cancer Council Victoria.

Witte, K., Meyer G., Martell, D. (2001). *Effective health risk messages: a step-by-step guide*. Thousand Oaks, CA: Sage Publications.

Wood, L., France, K., Hunt, K., Eades, S., & Slack-Smith, L. (2008). Indigenous women and smoking during pregnancy: Knowledge, cultural contexts and barriers to cessation. *Social Science & Medicine, 66*(11), 2378-2389. doi: 10.1016/j.socscimed.2008.01.024

Tables

TABLE 1: Methodological quality assessment rating and hierarchy of evidence-for-practice for included studies

STUDY	Wood 2008	Gilligan 2009	Heath 2006	Johnston 2008	Wilson 2009	Douglas 2001	Passey 2009
Methodological Quality Rating (Hawker et al., 2002)							
1. Abstract and title	G	G	P	G	G	G	VP
2. Intro and aims	F	F	F	G	G	G	F
3. Method and data	F	G	F	F	F	F	F
4. Sampling	F	G	F	F	P	P	P
5. Data Analysis	G	G	F	G	P	F	G
6. Ethics and bias	G	G	G	F	G	P	VP
7. Finding & results	G	G	G	G	F	G	F
8. Transferability/generalisability	F	G	P	F	P	P	P
9. Implications & usefulness	G	G	F	G	G	F	P
Total Score	320	350	270	320	280	270	210
Hierarchy of Evidence Level (Daly et al., 2007)	III	III	III	II	III	III	III

Legend: G = good (40 points); F = fair (30 points); P = poor (20 points); VP = very poor 10 points).
I = Generalisable study; II = Conceptual Study; III = Descriptive Study; IV = Single Case Study

Table 2: Summary of included studies

Author	Issues explored	Location	Participants	Type of study	Hawker /Daly	Summary of evidence
Johnston & Thomas, 2008	Smoking behaviour, obstacles/drivers of quitting, experiences of never smokers	Northern Territory (NT) Remote	n=25 Indigenous community; n=13 Indigenous & non-indigenous staff	Qualitative. Semi-structured interviews	320 II	Reports protecting young children from ETS. Being role model important; negative impact of smoking on family
Douglas et al., 2001	Sudden Infant Death Syndrome risk reduction & infant care practices, & non-smoking	North Queensland Urban, Rural & Remote	n=195 mothers attending child health or antenatal clinics	Qualitative. Health-worker interview.	270 III	Less knowledge of risks with smoking & SIDs in Indigenous compared with Caucasian women, particularly smoking when pregnant
Wilson, 2009	Elements and features of antenatal care important to Aboriginal women	Central Australia, NT Urban & Remote	n=136 Aboriginal women; young & older women	Qualitative. Focus group or individual discussion	280 III	Negative effects of smoking; stopping or reducing in pregnancy; difficultly quitting: reduced problem solving. Misconceptions tobacco use not harmful
Heath et al., 2006	Smoking habits, views about smoking, nicotine dependence, readiness to change & barriers to quit.	Townsville, North Queensland Urban	n= 66 Aboriginal & Torres Strait Islanders having maternity care or women's checks	Mixed Methodology. Survey by IHW	270 III	77% low nicotine dependency scores & 23% mid-high. Beliefs: smoking relieves stress; influenced by friends or family and boredom.
Wood et al., 2008	Context, perceptions & attitudes of smoking in pregnancy; knowledge of risks; barriers & support for cessation; attitudes to IHW smoking & cessation	Perth, Western Australia Urban	n= 50 Indigenous women of child-bearing age & n=10 IHWs	Qualitative Focus groups & in-depth semi-structured interviews:	320 III	Smoking allied to poverty, boredom, unemployment & stress: impedes cessation. Pregnancy a catalyst for change; smoking reduced but risks discounted/denied; social & financial issues a priority; barriers to role of IHWs
Passey et al., 2009	Meaning & significance of smoking for rural Aboriginal women: barriers & enhancers to quitting	New South Wales Rural	n= 36 Aboriginal women & IHW from 5 different rural locations	Qualitative Focus groups & semi-structured interviews	210 III	Smoking norms; stress high in pregnancy; allied poor family health & death. Alcohol/drugs harms more obvious; poor knowledge of harm to self & child; relapse after birth
Gilligan et al., 2009	Knowledge, attitudes & risks of maternal smoking; factors allied to antenatal smoking; rates & patterns of ante-natal smoking	Far North Queensland Urban	n= 145 Aboriginal & Torres Strait Islander women attending a health service.	Quantitative Interview-survey by Indigenous project officer	350 III	General knowledge of harms. Maternal smokers more likely to have smoking partner, Aboriginal partner, smokers at home, & stress compared to non-smokers. Belief if exposed to ETS no point in quitting

TABLE 3: Representation of emergent third order constructs in the included papers

Third order constructs	Wood et al., 2008	Gilligan et al., 2009	Passey et al., 2009	Heath et al., 2006	Wilson, 2009	Johnston & Thomas, 2008 *	Douglas et al., 2001
1. SMOKING IS A WAY OF LIFE	•	•	•		•		
2. SMOKING HELPS GETTING THROUGH THE DAY	•	•	•	•	•		
3. SMOKING PERSISTS DESPITE KNOWLEDGE OF HARMS	•	•	•		•		
4. LACK OF SALIENCE OF HEALTH RISK MESSAGES ABOUT SMOKING	•	•	•	•	•	•	•
5. RESISTANCE TO ADVICE AND SMOKING JUSTIFIED	•	•	•	•	•		
6. REDUCING HARM, BEING A PROTECTOR	•		•		•	•	
7. INFORMATION NOT ENOUGH TO CHANGE SMOKING BEHAVIOUR	•	•	•	•	•		•
8. QUITTING IS HARD	•		•	•	•		
9. ROLE OF FAMILY AND COMMUNITY IN QUITTING	•	•	•	•	•		
10. BEING A GOOD ROLE MODEL HAS IMPORTANCE					•	•	
11. ROLE OF IHWs AND OTHER PROFESSIONALS IS CHALLENGING	•		•				

* Data from Johnston's paper was extracted specific to maternal smoking only for the purpose of this review, even though other 3rd order constructs were consistent with their focus on smoking in Indigenous people in general.

Box 1: Recommended Practice Based Strategies

1. Increase knowledge of harms of smoking in pregnancy
    i. Address specific effects of maternal smoking on baby and mother
    ii. Target first-time mothers
    iii. Promote quitting in early pregnancy and pre-conception
    iv. Make foetal exposure to smoking more tangible
2. Increase salience of anti-smoking messages to Indigenous maternal smokers
    i. Target messages to counter misconceptions and resistance
    ii. Focus on the incongruence between maternal desire to protect and their continued smoking behavior
    iii. Support positive attitudes and behaviours
    iv. Emphasise the importance of positive role models for smoke-free Aboriginal and Torres Strait Islander communities
    v. Promote the message that with effective treatment, quitting can be an manageable option
3. Provide culturally targeted quit support
    i. Support harm reduction in pregnancy
    ii. Support further measures to go completely smoke-free by quitting
    iii. Provide stress management skills
    iv. Increase self-efficacy in smokers of child-bearing age, maternal, and post-natal smokers
    v. Provide quit services such as groups
    vi. Include hands-on activities in quit courses
    vii. One-to-one consultation for maternal smokers and their families
    viii. Develop support networks for maternal smokers to encourage quitting
    ix. Involve the family and household in strategies to quit
    x. Specifically target male partners
    xi. Increase knowledge of evidence-based therapies suitable for maternal smokers and their families
    xii. Remove barriers to access of evidence-based therapies
4. Support role of health professionals
    i. Policy development to support IHW role in tobacco control
    ii. Increased training and communication skill development
    iii. Support for IHW smoking cessation

Figures

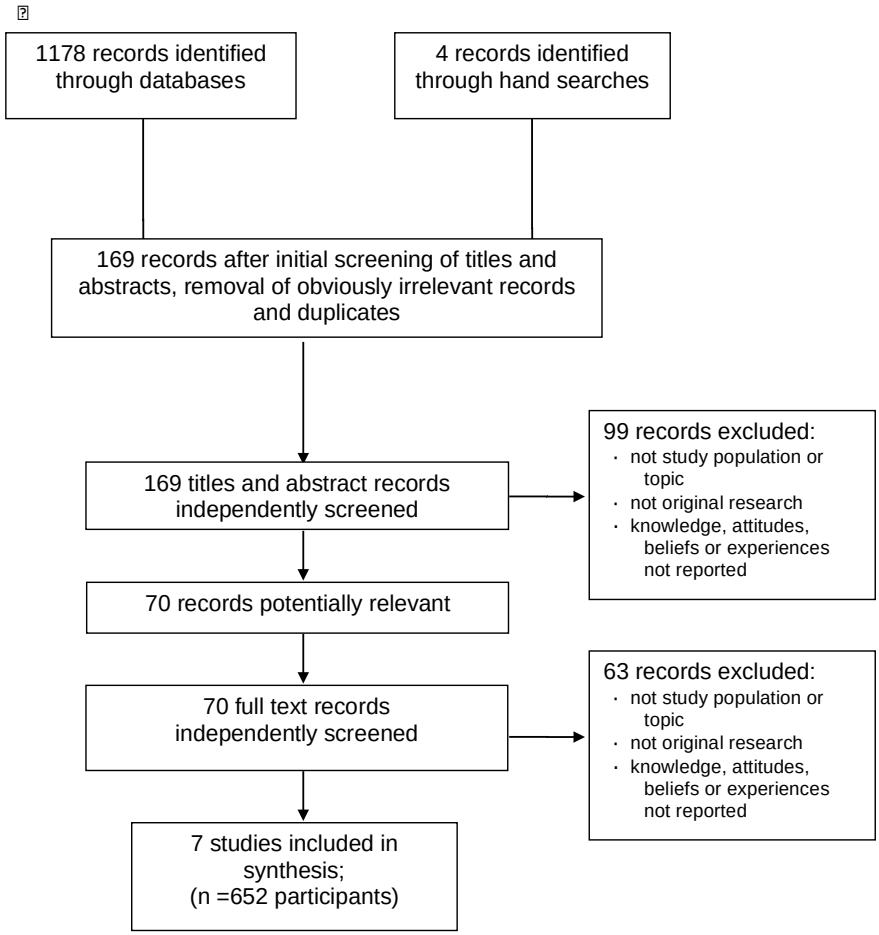

Figure 1

Figure1: Process of identification of studies for inclusion in the review

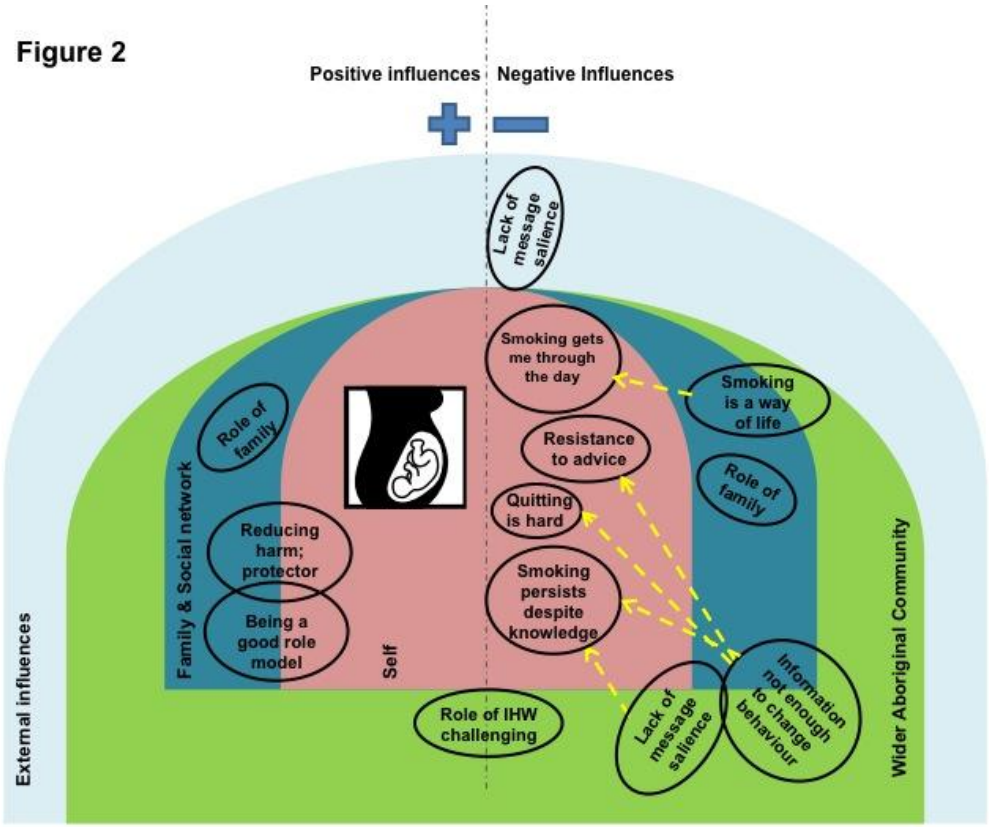

Figure 2: Influences on tobacco smoking and cessation amongst maternal Aboriginal and Torres Strait Islander smokers and their families. The themed third order constructs are juxtaposed to form a line of argument synthesis, placing the pregnant Aboriginal or Torres Strait Islander smoker (the self) in context of family and social network, wider Aboriginal community and external influences. Positive and negative influences are depicted.